

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently amended) A method for detecting the presence of a beta-lactam resistant micro-organism in a biological sample and simultaneously determining the genotype of the beta-lactam resistance, said method ~~comprising~~ **consisting essentially of**

- (i) obtaining a biological sample;
- (ii) optionally isolating DNA contained in the sample;
- (iii) contacting the DNA of the sample with a micro-array, harboring on predetermined locations thereon different sets of capture probes, under conditions allowing hybridization of complementary strands,

~~(a)~~—wherein **each of said sets consists of at least two representatives and** each representative ~~of a set of capture probes comprises~~ **consists of** the sequence  $R^1$ -(X)- $R^2$ , which sequence represents a selected part of the sequence of a beta-lactamase gene among the TEM beta-lactamases exhibiting Extended Spectrum (ESBL) or Inhibitor Resistant (IRT) phenotype, wherein X ~~represents~~ **consists of** a nucleotide triplet **identified in** ~~of~~ table 1 **as either a wild type or mutant sequence of TEM beta-lactamase,** and wherein  $R^1$  **consists of 3 to 20 consecutive nucleotides immediately 5' to X in the TEM beta-lactamase** and  $R^2$  **consists of 3 to 20 consecutive nucleotides immediately 3' to X in the TEM beta-lactamase** ~~each have a length of from about 3 to 20 nucleotides specific for the TEM beta lactamase gene,~~

~~(b)~~—wherein ~~the different sets of capture probes are selected such that an adjacent set starts at a given position 3n of nucleotides down stream from the first set of capture probes, wherein n is an integer of 1 to 10, so that the nucleotide sequence of the beta-lactamase gene is covered over a desired range,~~ and

- (iv) determining whether a hybridization occurs and, if so, at which position on the array, wherein the occurrence and location of a hybridization is indicative of (1) the presence of a beta-lactam resistant micro-organism and (2) a particular polymorphism of the TEM beta lactamase gene of the beta-lactam resistant micro-organism.
2. (Original) The method according to claim 1, wherein the DNA is isolated from the biological sample prior to contacting it with the array.
  3. (Original) The method according to claim 1, wherein the DNA contained in the sample is amplified by means of one or more primer(s).
  4. (Original) The method according to claim 3, wherein the amplified DNA is fragmented prior to the contacting step.
  5. (Previously presented) The method according to claim 1, wherein the sequence R<sub>1</sub>-X-R<sub>2</sub> is derived from a beta-lactamase of the micro-organisms selected from the group consisting of *E.coli*, *Enterobacteriaceae*, *Pseudomonas*, *Haemophilus*, *Neisseria*, *Enterobacter*, *Klebsiella*, *Enterobacteriaceae* (*Enterobacter aerogenes*, *Morganella morganii*, *Proteus mirabilis* *Proteus rettgeri*, *Proteus* spp., *Providencia* spp. *Salmonella* spp.), *Klebsiella* (*K. pneumoniae*, *K. ozaena*, *K. oxytoca*), *Capnocytophaga ochrace*, *Citrobacter* spp., *Serratia marcescens*, *Shigella dysenteriae* and *Burkholderia cepacia*.
  6. (Original) The method according to claim 1, wherein the capture probes are selected, so that the triplet to be permuted covers a known location of SNP's in the beta-lactamase gene.
  7. (Original) The method according to claim 5, wherein the beta-lactamase is a serin- or a zink- beta-lactamase.
  - 8-9. Cancelled.
  10. (Original) The method according to claim 4, wherein the target DNA is fragmented to fragments having a size of about 15 to about 50 bp.

11. (Original) The method according to claim 1, wherein the DNA is labeled prior to contacting it with the capture probes.
12. (Original) The method according to claim 1, wherein the DNA is labeled after the contacting step.
13. (Original) The method according to claims 11 or 12, wherein the label is selected from the group consisting of fluorescence labels, colorimetric labels, radioactive labels, and labels that are electrically, electrochemically and/or enzymatically detectable.
14. (Withdrawn-Currently amended) A kit for detecting the presence of a beta-lactam resistant micro-organism in a biological sample and simultaneously determining the genotype of the beta-lactam resistance, which comprises:
  - (i) a micro-array, harboring on predetermined locations thereon different sets of capture probes,

**(a)——wherein each of said sets consists of at least two representatives and each representative of a set of capture probes comprises consists of the sequence  $R^1$ -(X)- $R^2$ , which sequence represents a selected part of the sequence of a beta-lactamase gene among the TEM beta-lactamases exhibiting Extended Spectrum (ESBL) or Inhibitor Resistant (IRT) phenotype, wherein X ~~represents~~ consists of a nucleotide triplet ~~of identified in~~ table 1 as either a wild type or mutant sequence of TEM beta-lactamase, and wherein  $R^1$  consists of 3 to 20 consecutive nucleotides immediately 5' to X in the TEM beta-lactamase and  $R^2$  consists of 3 to 20 consecutive nucleotides immediately 3' to X in the TEM beta-lactamase each have a length of from about 5 to 20 nucleotides specific for the TEM beta-lactamase gene,**

**(b)——wherein the different sets of capture probes are selected such that an adjacent set starts at a given position  $3n$  of nucleotides down stream from the first set of capture probes, wherein  $n$  is an integer of 1 to 10, so that the**

~~nucleotide sequence of the beta-lactamase gene is covered over a desired range,~~  
and

- (ii) buffers and reagents for performing the method.
15. (New) A method for detecting the presence of a beta-lactam resistant micro-organism in a biological sample and simultaneously determining the genotype of the beta-lactam resistance, said method comprising
- (i) obtaining a biological sample;
  - (ii) optionally isolating DNA contained in the sample;
  - (iii) contacting the DNA of the sample with a micro-array comprising capture probes having the nucleic acid sequences of SEQ ID NOS: 5 to 45, under conditions allowing hybridization of complementary strands; and
  - (iv) determining whether a hybridization occurs and, if so, at which position on the array, wherein the occurrence and location of a hybridization is indicative of (1) the presence of a beta-lactam resistant micro-organism and (2) a particular polymorphism of the TEM beta lactamase gene of the beta-lactam resistant micro-organism.